UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

SCANSOFT, INC.,	)	
	)	
	)	
Plaintiff,	)	
	)	
v.	)	C.A. No. 04-10353-PBS
	)	
	)	
VOICE SIGNAL TECHNOLOGIES, INC.,	)	
LAURENCE S. GILLICK, ROBERT S.	)	
ROTH, JONATHAN P. YAMRON, and	)	
MANFRED G. GRABHERR,	)	
	)	
Defendants.	)	
	)	

DECLARATION OF DON MCALLASTER

I, Don McAllaster, depose and state as follows:

1.   I am a Senior Research Scientist at Voice Signal Technologies. I have worked for Voice Signal for five years. I make this Declaration in support of Voice Signal's Memorandum In Opposition To ScanSoft's Motion To Allow Inspection Of All Computers And Computer Servers In The Possession, Custody Or Control Of The Individual Defendants And To Compel VST To Provide Information Necessary For The Neutral Expert Procedure.

2.   I was the Voice Signal employee in charge of the collection of source code data responsive to the Court's Neutral Expert Procedure, January 20 Order and March 15 Order. My initial work in response to the Court's Neutral Expert Procedure (as modified by the Court in its January 20 Order) encompassed collecting (a) all source code that was created and/or modified by the individual defendants; and (b) documents authored by the individual defendants in their first full year of work at Voice Signal. *See* Neutral Expert Procedure, ¶ 9. Therefore, in

collecting the source code and documents, I identified the first year period which consisted of the individual defendants' first twelve months of employment (not counting the Lernout & Hauspie injunction period). That period ended in mid-June, 2002. The initial production made on January 27, 2006, therefore, reflects the Voice Signal source code on which the individual defendants worked during the first year time period. It included the Elvis demonstration in September 2001.

3.   I was informed of the Court's March 15 Order on March 16, 2006. On that date, I participated in a conference call with Voice Signal's outside lawyers, Choate, Hall & Stewart LLP ("Choate"), along with several other Voice Signal employees. Choate advised us that the March 15 Order meant that -- in addition to the code already provided to ScanSoft pursuant to the Neutral Expert Procedure and the January 20 Order -- Voice Signal was required to produce the following: (a) full first year recognizer source code (regardless of whether it was worked on by the individual defendants); and (b) acoustic and language model source code and training tools. In response, my colleagues and I explained that the recognizer source code could be provided quickly (because it was kept under Voice Signal's Perforce source control system, which is described below). The other source code and tools, however, would take more time to produce because they were scattered throughout Voice Signal's file systems which totaled several tera-Bytes. In any event, it was my understanding that Voice Signal should produce the materials ordered by the Court as soon as possible.

4.   Voice Signal collected and produced the ordered materials over the next few business days. On Friday, March 17, 2006, Voice Signal hand delivered four CDs to ScanSoft's designated counsel, Brad Lawrence. The CDs contained the full first year recognizer source code. *See* ¶ 5, *infra.* Upon delivery, it is my understanding that this code was loaded on a laptop

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previously prepared by Voice Signal for ScanSoft's use. On March 21 and 22, 2006, Voice Signal hand delivered two additional CDs to Mr. Lawrence. These CDs contained acoustic and language model source code and training tools, *see* ¶ 6, *infra*, and likewise were loaded on the laptop prepared by Voice Signal for ScanSoft.[1]

5.   To collect the full first year recognizer source code, I used Voice Signal's version control software, a commercial system called "Perforce." Perforce is the system used by Voice Signal to track modifications to Voice Signal's source code in their ordinary course of business. Using Perforce, Voice Signal has produced source code related to every recognizer on which work was performed (by anyone in the company) during the first year period prescribed by the Court. The names of those recognizers are ELVIS (two versions), Voice Tag, CCR, Microrec, Large Vocabulary, and Small Vocabulary. It is my understanding that ScanSoft has complained that Voice Signal has not produced any code relating to its VSuite and VoiceMode products. This is not accurate. VSuite and VoiceMode are not software programs. They are marketing names for products that have several components, including a recognizer. The VSuite product was not used in a cellular phone until late 2003 and the VoiceMode product was not used in a cellular phone until March, 2005. The VoiceMode product utilizes a recognizer that has evolved from the ELVIS recognizer. The earlier version VSuite products utilize the Voice Tag and CCR recognizers, and the later versions of VSuite Elvis. Therefore, Voice Signal *has*, in fact, produced First Year Source Code relating to the recognizers that were later incorporated in the VoiceMode and VSuite. *See* CD numbers 1, 2, 3, and 4.

6.   I employed a separate procedure to produce Voice Signal's acoustic and language

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[1] The source code for language modeling tools written by defendant Jonathan P. Yamron had already been provided to ScanSoft. *See* hard drive of laptop provided by Voice Signal to ScanSoft on January 27, 2006 at ꞏ. This code was not kept under Voice Signal's Perforce source control system and, therefore, was not re-produced with the six CDs in March 2006.

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model training tools because they were not maintained under the version control software. Specifically, Voice Signal created acoustic models using a suite of programs known as This tool kit is publicly available, but Voice Signal is not authorized to redistribute it to ScanSoft under the terms of the license agreements. Therefore, Voice Signal provided ScanSoft with instructions on how to download source code for the   version used in June 2002 (in a "README" file), along with instructions on how to apply the changes and enhancements that Voice Signal had made to   by that date. Making use of various programs in   Voice Signal created acoustic models using Perl, Python, and shell scripts. These tools were scattered throughout the 15 file systems and 7 TB of disk space used by modelers at Voice Signal. Using automatic tools, these file systems were searched for Perl, Python, or shell scripts that had creation dates prior to June 2002. These files were copied to CD number 5 and provided to ScanSoft. In addition, Voice Signal delivered very early recognizer and acoustic training tools written in 2000. *See* CD numbers 5 and 6.

7.   Source code for VST recognizers: Voice Signal has produced 2,022 C files and 151 C++ files, along with 1894 .h header files. *See* CD numbers 1-4. These header files describe the various APIs for Voice Signal's recognizers. The header files have 929,744 lines; the C and C++ files have nearly 4,500,000 lines of code and comments (4,464,367). There are also almost 50,000 lines of Perl and Python scripts, and more than 15,000 lines of "make" files which describe how the recognizers were to be built and compiled.

8.   Design and planning documents: Voice Signal has produced a substantial amount of information concerning the design and development of its software, including more than 190 design and planning documents. For example, Voice Signal has produced the following design and planning documents:

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In addition, Voice Signal has produced design documents concerning language modeling from the files of Jonathan Yamron that can be found at:

9.   <u>Test scripts and recognizer log files:</u> Voice Signal has produced all the documents in its possession concerning testing. Voice Signal did not have a formal testing plan or any testing benchmarks in place during the time period in question. However, Voice Signal has produced what documents it has, including a large volume of data and log files which constitute testing parameters and results for the development of its speech recognizers. Specifically, Voice Signal has produced approximately 45 recognizer log files and test scripts, totaling more than 300,000 lines of output. These files are part of the source tree regression testing performed by Voice Signal. These files can principally be found at:

10.   <u>Acoustic Training Models:</u> As discussed above, Voice Signal has provided ScanSoft with instructions for obtaining the code for the complete acoustic training tools in a "README" file on CD number 5. All of Voice Signal's changes and enhancements to the tool kit during the first year period were produced to ScanSoft and are in the directory with instructions on how to apply these changes and enhancements in

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with instructions on how to apply these changes and enhancements in

In addition, Voice Signal delivered more than 23,000 scripts which used

to produce and/or test acoustic models. *See* CD number 5 in the   ' directory (many

perl, python, and shell scripts in that directory hierarchy); *see also* the many scripts named

11. <u>Language Training Models</u>: Voice Signal has produced language model training code and tools. At the time period in question, Voice Signal was not offering a product for which it needed a sophisticated language model. Voice Signal was focused on recognizers for voice dialing and digit dialing, neither of which required a large vocabulary to be effective. Voice Signal's language models were trained using the freely available

Modeling tool kit. The   tool kit was sufficient to meet the needs of Voice Signal's recognizers in development. An example of the language model training

using   this   tool   kit   can   be   found   on   CD   number   1   at:
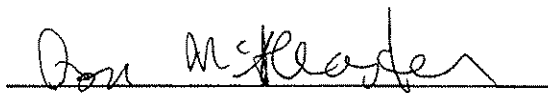
Later, Voice Signal did begin to develop its own tools for building language models. That code that had been developed in the first year can be found in the source code production for Jonathan Yamron.

12. <u>Data Files:</u> Voice Signal has produced more than a dozen acoustic models, as well as several language models and lexicon ("vocabulary files") combinations. These can be found

on   CD   numbers   3   and   1,

models and lexica in various formats). These are the data files necessary for the operation of the
ELVIS recognizer. In its Motion, ScanSoft also refers to a second type of "data file" -- model
training data. For acoustic modeling, these are recordings and transcriptions of actual speech.
This is raw data that is used by acoustic modeling tools like   . to produce acoustic models.
For language model training, "data files" are text (such as text from the New York Times).
These text data files are then used to build language models. The data files do not constitute
source code and would not fall within the definition of source code provided by the Court. These
files are extremely voluminous and offer no insight as to how the recognizer works. Further,
many of the data files that Voice Signal used in the development of its software are proprietary
to a third party, such as data files purchased from the New York Times, and cannot be produced
by Voice Signal.

13. In total, Voice Signal has produced over 4 million lines of source code and comments and produced more than 15,000 lines of "make" files, which describe how the recognizers were to be built and compiled.

Signed under the pains and penalties of perjury under the laws of the United States this 16th day of May, 2006.

Don McAllaster